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# daemon

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Pronounced *DEE-mun* or *DAY-mun*. A process that runs in the background and performs a specified operation at predefined times or in response to certain events. The term *daemon* is a UNIX term, though many other operating systems provide support for daemons, though they're sometimes called other names. Windows, for example, refers to daemons as *System Agents* and *services*.

Typical daemon processes include print spoolers, e-mail handlers, and other programs that perform administrative tasks for the operating system. The term comes from Greek mythology, where daemons were guardian spirits.

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# Daemon (computer software)

From Wikipedia, the free encyclopedia

In Unix and other computer multitasking operating systems, a **daemon** (IPA pronunciation: /ˈdeɪmən/ or /ˈdɪmən/<sup>[1]</sup>) is a computer program that runs in the background, rather than under the direct control of a user; they are usually initiated as processes. Typically daemons have names that end with the letter "d" (for example, `syslogd`, the daemon that handles the system log, or `sshd`, which handles the incoming SSH connections).

In a UNIX-like environment, the parent process of a daemon is normally `init` (PPID=1). Processes usually become daemons by forking a child process and then having their parent process immediately exit, thus causing `init` to adopt the child process. This is a somewhat simplified view of things, naturally, as other operations are generally performed (such as disassociating the daemon process from any controlling tty), convenience routines such as `daemon(3)` existing in some UNIX systems for that purpose.

Systems often start (or "launch") daemons at boot time: they often serve the function of responding to network requests, hardware activity, or other programs by performing some task. Daemons can also configure hardware (like `devfsd` on some Linux systems), run scheduled tasks (like `cron`), and perform a variety of other tasks.

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## Terminology

The term was coined by the programmers of MIT's Project MAC. They took the name from Maxwell's demon, an imaginary being from a famous thought experiment that constantly works in the background, sorting molecules.<sup>[2]</sup> Unix systems inherited this terminology. Daemons are also characters in Greek mythology, some of whom handled tasks that the gods couldn't be bothered with, much like computer daemons often handle tasks in the background that the user can't be bothered with. BSD and some of its derivatives have adopted a daemon as its mascot, although this mascot is actually a cute stereotypical depiction of a demon from Christianity. (The alternative expansion of "daemon" as "disk and execution monitor" is also sometimes used, but is a backronym.)

## Pronunciation

The word *daemon*, taken out of its computer science context, is universally pronounced as /ˈdimən/<sup>[3][4]</sup><sup>[5]</sup>, i.e., as a homonym of the word *demon*. Perhaps due to the relative obscurity of the word in other contexts, the alternate pronunciation of /ˈdɛmən/ has popularity in its computer science context<sup>[6]</sup>.

## Humor

The term daemon often leads to humorous connections with its mythical homonym demon; for example, systems might have an *exorcise* command to kill off undesired daemons [1] (<http://very.net/~nikolai/penix/overview.html>), and the parody website OBJECTIVE: Ministries [2] (<http://objectiveministries.org/creation/propaganda.html>) uses this to claim that Apple's BSD-derived Mac OS X is Satanic due to its use of daemons.

## Types of daemons

In a strictly technical sense, in the Unix world, a process comprises a daemon when it has process number 1 (init) as its parent process and no controlling terminal. The init process adopts any process whose parent process terminates. The common method for a process to become a daemon involves:

- Disassociating from the controlling tty
- Becoming a session leader
- Becoming a process group leader
- Staying in the background by forking and exiting (once or twice). This is required sometimes for the process to become a session leader. It also allows the parent process to continue its normal execution. This idiom is sometimes summarized with the phrase "fork off and die"
- Setting the root directory ("/") as the current working directory so that the process will not keep any directory in use
- Changing the umask to 0 to allow open(), creat(), et al. calls to provide their own permission masks and not to depend on the umask of the caller
- Closing all inherited open files at the time of execution (required files will be opened later) that are left open by the parent process. Those include file descriptors 0, 1 and 2 (stdin, stdout, stderr) too.
- Using a logfile, the console, or /dev/null as stdin, stdout, and stderr

In common Unix usage a daemon may be any background process, whether a child of init or not. Unix users sometimes spell daemon as *demon*, and most usually pronounce the word that way.

In the 1970s, "DAEMON" was pronounced "DAY-mon", because it stood for "**DA**y/**E**vening **MON**itor", referring to any system-based program (as opposed to a user application) that ran all day long, recording and reporting on various system statistics, such as number of users, time spent online, input/output processes, file accesses, etc. DAEMONs were used in Digital Equipment Corporation (DEC) computers.

## Etymology

In the general sense, daemon is an older form of the word demon. In the Unix System Administration Handbook, Evi Nemeth <sup>[7]</sup>, has this to say about daemons:

Many people equate the word "daemon" with the word "demon", implying some kind of satanic connection between UNIX and the underworld. This is an egregious misunderstanding. "Daemon" is actually a much older form of "demon"; daemons have no particular bias towards good or evil, but rather serve to help define a person's character or personality. The ancient Greeks' concept of a "personal daemon" was similar to the modern concept of a "guardian angel" — *eudaemonia* is the state of being helped or protected by a kindly spirit. As a rule, UNIX systems seem to be infested with both daemons and demons. (p.403)

## Windows equivalent

In the Microsoft DOS environment, such programs were written as Terminate and Stay Resident (TSR) software. On Microsoft Windows systems, programs called *services* perform the functions of daemons, though the term *daemon* has started to creep into common usage on that platform as well. They run as processes, usually do not interact with the monitor, keyboard, and mouse, and are launched (or not launched) by the operating system at boot time.

## Mac OS equivalent

On the original Mac OS, optional features and services were provided by files loaded at startup time that patched the operating system; these were known as **system extensions** and **control panels**. Later versions of classic Mac OS augmented these with fully-fledged **faceless background applications**: regular applications that ran in the background. To the user, these were still described as, and disguised as, regular system extensions.

Mac OS X, being a Unix-like system, has daemons. (There are *services* as well, but these are completely different in concept.)

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## See also

- Server
- List of computer term etymologies

# Background (computer software)

From Wikipedia, the free encyclopedia

The **background**, in the context of computer software processes, refers in general to processes that are run with a relatively low priority, require little or no input, and generate a minimum of output.


Background processes can roughly be divided into two categories: daemons and compute-intensive tasks.

Daemon processes offer services like web pages serving, email transferring, time synchronization, and similar. They usually consume little CPU and memory, and run quietly without user interaction. They mainly communicate with other computer programs, or with other computers via network.

The background is also used for long tasks that require huge amount of computation and thus CPU time. Running this kind of task at low priority may seem counterintuitive, but it becomes clearer when one considers that a computer typically spends more than 90% of its time waiting for user input. One can assign a high priority to interactive tasks, that will appear highly responsive, and leave the majority of the time to low priority tasks.

## See also

- Scheduling.

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